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Alberta Cancer Board

Division of Population Health & Information

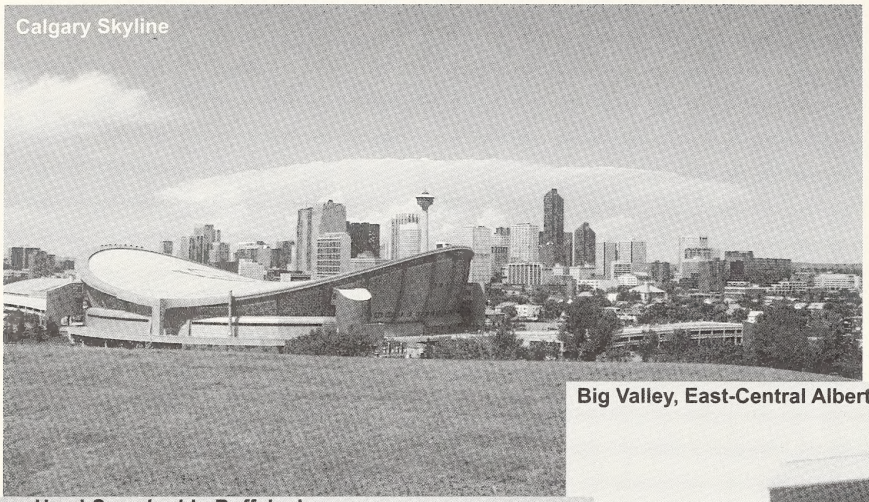
Screen Test

Alberta Program for the Early Detection of Breast Cancer

2001/03 Biennial Report

March 2004

Screen Test
Alberta Program for the Early Detection of Breast Cancer



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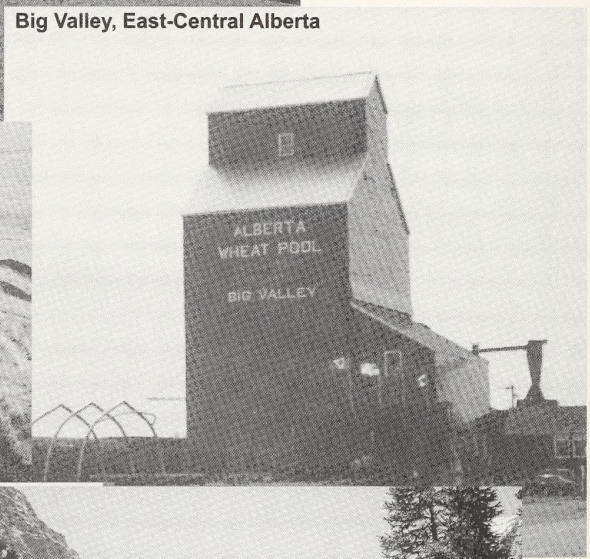

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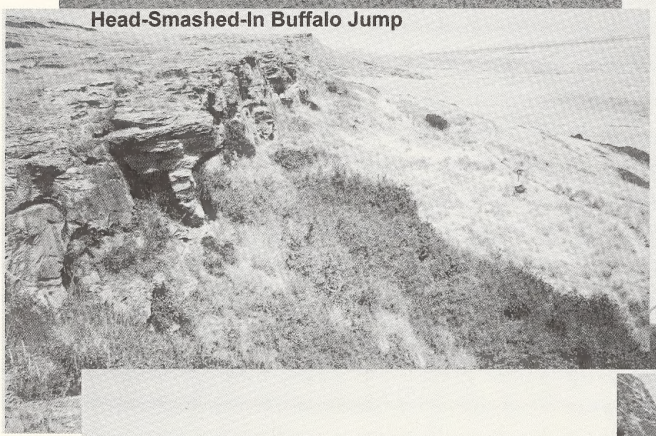

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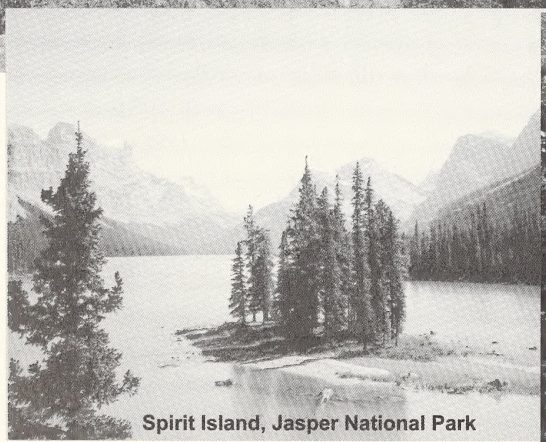

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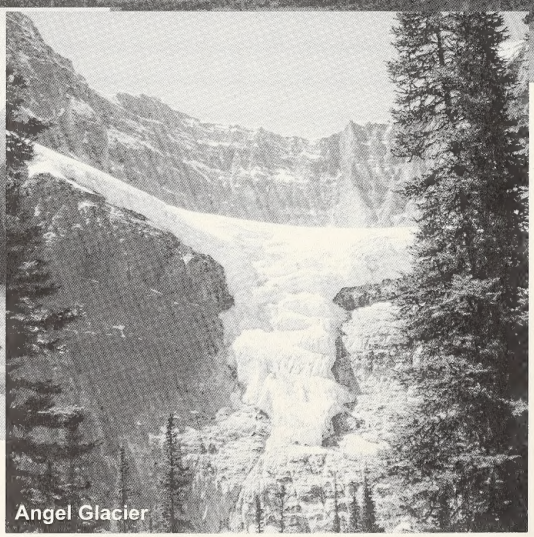

Angel Glacier

Screen Test: Alberta Program for the Early Detection of Breast Cancer

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Division of Population Health and Information
Alberta Cancer Board

March 2004

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Screen Test
Alberta Program for the Early Detection of Breast Cancer

Alberta Cancer Board
Division of Population Health and Information

Screen Test: Alberta Program for the Early Detection of Breast Cancer 2001/03 Biennial Report

March 2004

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About the Alberta Cancer Board

Facilities and Services

The Alberta Cancer Board is a Provincial Health Authority that operates cancer facilities and programs in Alberta. Services include cancer prevention, early detection, diagnosis, treatment, research and education. Also included in this role is coordinating, in cooperation with others, the planning and delivery of provincial cancer initiatives.

As part of this mandate the Alberta Cancer Board operates:

Cancer treatment and research facilities
Cross Cancer Institute in Edmonton and Tom Baker Cancer Centre in Calgary

Associate Cancer Centres
Grande Prairie, Lethbridge, Red Deer and Medicine Hat

Community Cancer Centres (in partnership with Regional Health Authorities)
Barrhead, Bonnyville, Camrose, Canmore, Drayton Valley, Drumheller, Fort McMurray, High River, Hinton, Lloydminster and Peace River

Division of Population Health and Information
Information systems, information privacy and security, clinical data integration and:

***Screen Test:* Alberta Program for the Early Detection of Breast Cancer:** Screening mammography and breast health education services with fixed-site offices in Calgary and Edmonton and mobile mammography services throughout the province.

Alberta Cervical Cancer Screening Program (ACCSP): The provincial cervical cancer screening program which promotes cervical health education, increases awareness about cervical cancer, and monitors and supports population-based screening.

Cancer prevention outreach: A variety of services to Regional Health Authorities including cancer information, assistance with program and policy development and links to resources.

Alberta Cancer Registry: A computerized database that tracks all cancer cases and deaths in the province to provide population-based data on monitoring and surveillance of cancer data.

Population health research: Research and surveillance into population-based trends in cancer incidence, morbidity and mortality, the causes of cancer, prevention strategies and the early detection of cancer.

Table of Contents

Executive Summary 1

Message from the Director and Chief Radiologist 2

Introduction 3

Background 3

Recommendations for Organized Breast Cancer Screening Programs 4

Program Outcomes 7

Geographic Reach of the Target Population 7

Client Profile 11

Screening Results 18

Community Mobilization 25

Research 27

Client Satisfaction 29

Summary and Future Directions 30

References 31

Appendix A: Glossary of Terms 32

Appendix B: Organizational Charts 34

Appendix C: Relevant Legislation 35

Appendix D: *Screen Test* Resources 36

List of Tables and Figures

Figures

Figure 1: Age Group at Appointment 7

Figure 2: *Screen Test* Mobile Mammography Sites 10

Figure 3: Cumulative Probability of Women—by Age Group—Screened 1999/01 Returning for Subsequent Screen 12

Figure 4: Cumulative Probability of Women Aged 50 - 69 Screened 1999/01 Returning for Subsequent Screen 13

Figure 5: Clinical Breast Examination - Years Since Last CBE 14

Figure 6: Breast Self Examination - Frequency of Women Performing BSE Per Year 14

Figure 7: Information Sources - First and Subsequent Visits, 2001/03 15

Figure 8: Highest Education Level of 2001/03 *Screen Test* Clients vs. 2001 Census 16

Figure 9: Ancestral Ethnic Group Origin of 01/03 *Screen Test* Clients vs. 2001 Census 17

Figure 10: Screening Results, 2001/03 19

Figure 11: Abnormality Rates - 1 Year Intervals, 1990 Oct - 2003 Mar 20

Figure 12: 2001 Program vs. Non-Program Detected Cancer Stage 23

Figure 13: Fibroglandular Tissue Density, 2001/03 24

Figure 14: 2001 *Screen Test* vs. Cancer Registry Staged Cancers 27

Tables

Table 1: *Screen Test* Visits, 2001 April - 2003 March 8

Table 2: *Screen Test* Visits by RHA of Residence, 2001 April - 2003 March 9

Table 3: Self Reported Last Mammogram, 2001 April - 2003 March 11

Table 4: Major Breast Cancer Risk Factors, 2001 April - 2003 March 17

Table 5: Other Breast Cancer Risk Factors, 2001 April - 2003 March 18

Table 6: Days Until Client Letter Sent, 2001 April - 2003 March 18

Table 7: Outcome Indicators by Age Group, 2001/03 21

Table 8: Prognostic Features by Age Group, 2001 April - 2003 March 22

Table 9: Diagnostic Procedures, 2001 April - 2003 March 23

Table 10: Client Satisfaction Subscale Score by Dimension 29

Executive Summary

Screen Test: Alberta Program for the Early Detection of Breast Cancer, now in its 14th year, offers breast screening services to Alberta women. The activities and goals of the Program are guided by Canadian recommendations for organized breast screening programs. ***Screen Test's main goal is to provide for the women of Alberta a high quality, cost effective screening program designed to interrupt the disease process of breast cancer at the earliest possible stage.***

This report provides a comprehensive description of the data and activities in which the Program is involved. Highlights of the Program activities and results from the 2001/03 fiscal years include:

- *Screen Test* provided screening services to over 46,000 women in the last two years, offering services to women at two fixed sites and over 100 mobile sites throughout the province.
- 73% of the women who attended *Screen Test* were in the target age group (50 - 69).
- Abnormality recall rates continued to meet and surpass Canadian and international standards, which are 10% or less for first time visits and 7% or less for subsequent visits. The Program's abnormality rate was 6% for first time visits and 3% for subsequent visits over the last two years.
- The Program's overall cancer detection rate was 4.6 per 1,000; for women 50 - 69, the prevalent cancer detection rate was 7 per 1,000 and the incident rate was 4 per 1,000, meeting respective targets and standards.
- *Screen Test's* overall positive predictive value for women aged 50 - 69 was 6.3% for initial screens, 12.9% for re-screens, and 10% overall. These rates surpass the national targets for 50 - 69 year old women of at least 5% and 6% for initial and re-screens respectively.
- Community mobilization continued their efforts to reach the under-served groups of women. The province-wide 'Ribbon of Hope' campaign was awarded a Guinness World Record for the 10 kilometers of linked pink ribbons.
- An assessment of client satisfaction provided positive feedback for *Screen Test* and generated discussion on how to continually improve the services offered to clients.
- *Screen Test* participated in numerous research and pilot projects intended to increase participation in screening programs and further assess the effectiveness of organized screening programs.

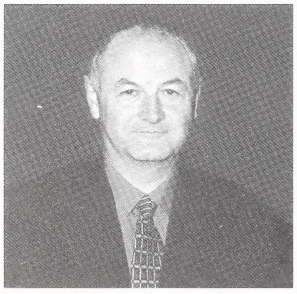
***Screen Test* Calgary**

Message from the Director and Chief Radiologist

It is our pleasure to introduce the 2001/03 *Screen Test* report. The report highlights the wide range of activities undertaken by the Program and demonstrates the continuing outstanding quality of the services we provide.

Dr. Carolyn Pim

Ongoing commitment to improving the quality of the Program is a common theme that underscores the initiatives during this two-year period. An in-depth evaluation revealed that our clients are highly satisfied with *Screen Test* and provided some suggestions for making it even better. We piloted several strategies to encourage women to return for regular screening. Innovative technologies such as scanning and bar coding were implemented to improve the efficiency of reporting and film tracking. The re-screen cancer detection rate, recall rate and positive predictive value continued to be among the best for Canadian breast screening programs.



Dr. Tim Terry

On the international front, mammography screening received intensive scrutiny, with controversies about its effectiveness raging in both the scientific community and the media. It was reassuring that reexamination of the evidence by numerous expert panels resulted in reaffirmation of the effectiveness of mammography screening in our target population of women aged 50 - 69.

In 2002, screening programs at the Alberta Cancer Board were realigned under a common organizational structure. The intent was to foster integration of functions that are common to population-based screening programs, such as health promotion, recruitment, information systems support and evaluation. The new structure has resulted in closer collaboration between *Screen Test* and the new Alberta Cervical Cancer Screening Program (ACCSP) and has allowed the ACCSP to learn from *Screen Test's* extensive experience. The reorganization will also facilitate the development of screening programs for other cancers.

The success of *Screen Test* is a result of not only the skill and commitment of our staff, but also on the enthusiastic contributions of our professional, community and Regional Health Authority partners. The report highlights the advantages of coordinating breast screening activities in a programmatic approach. However, Alberta does not yet have a truly provincial program that includes all breast screening services in the province. Until such a program is implemented, Alberta may not see the reductions in breast cancer mortality that are both desirable and achievable. The Alberta Cancer Board will continue to work with our health system partners to extend the advantages of an organized screening program to all Alberta women.

Carolyn Pim, MD, FRCPC
Director, Screening Programs
Alberta Cancer Board

Tim Terry, MB, FRCPC. FRCR (UK)
Chief Radiologist, *Screen Test*
Alberta Cancer Board

Introduction

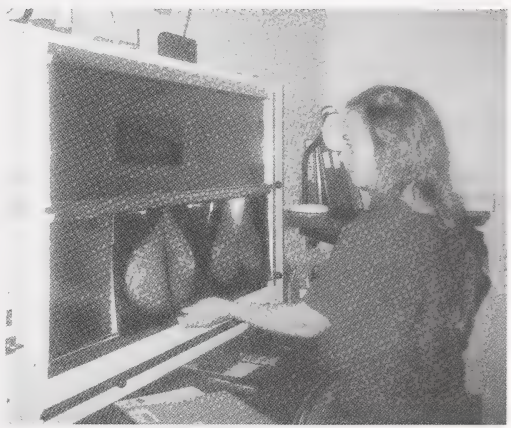
Alberta is a province of 3.1 million people where 60% live in urban areas and 40% live in rural areas. There are over 260,000 Alberta women aged 50 - 69 who are age-eligible for breast cancer screening.[1,2] Breast cancer is the most frequently diagnosed cancer among women (excluding non-melanoma skin cancer), and is second to lung cancer for cancer deaths.[3] Although other risk factors have been identified, age continues to be the most important predictor of breast cancer risk.[4]

In 2001, 1,644 Alberta women were diagnosed with invasive breast cancer and 425 women died of the disease.[5] Since 1981, the age-standardized incidence rates for breast cancer among Alberta women have increased. Conversely, since 1988, age-standardized mortality rates have decreased in Alberta, particularly in the mid-1990's.[6] These rates are similar to the overall Canadian rates. Screening mammography is currently the most effective tool for reducing breast cancer mortality, and organized breast cancer screening programs are the most effective delivery method for the population-based early detection of breast cancer.[7]

Background

1988: A National Workshop was convened to discuss breast cancer screening in Canada. The resulting recommendations were for breast cancer screening programs to be set up through provincially coordinated dedicated centres.

1989: The Alberta government announced funding for a provincial screening program. With funding from Alberta Health, the Alberta Cancer Board (ACB) was mandated to coordinate the program. A multidisciplinary Advisory Committee was formed to provide direction for program implementation and clearly define program goals and objectives.



Technologist viewing films

1990: The Alberta Cancer Board's *Screen Test* Program opened its doors simultaneously in Calgary and Edmonton on October 1, 1990.

1991: The first mobile mammography van commenced operation in north-central Alberta. In September, population-based invitation letters were sent to women aged 50 - 69.

1993: The report on the National Forum on Breast Cancer endorsed high-quality screening through programs and dedicated screening sites.

1994: The Program became part of the Alberta Cancer Board's newly formed Division of Epidemiology, Prevention and Screening.

1996: The Program added two more mobile vans, which provide screening services to women in northern and southern Alberta.

2000: *Screen Test* celebrated 10 years of service to Alberta women; the Program screened over 78,000 women in 163,000 appointments.

2003: The division of Epidemiology, Prevention, and Screening formally changed its name to Population, Health, and Information to reflect organizational restructuring that resulted in Information Systems, Information Security and Privacy office, and Clinical Data Integration joining the division.

Mission and Activities

Screen Test's mission is to reduce mortality from breast cancer in Alberta women. The Program's activities are directed by the goals and objectives identified by its Development Advisory Committee.

The purpose of the 2001/03 *Screen Test* Biennial Report is to inform the Alberta Cancer Board (ACB), Alberta Health and Wellness, Regional Health Authorities (RHAs), and health care professionals interested in breast cancer about the Program's activities and progress in meetings its targets. Information is reported biennially as most women attend the Program every two years following the Canadian screening recommendations for screening mammography.

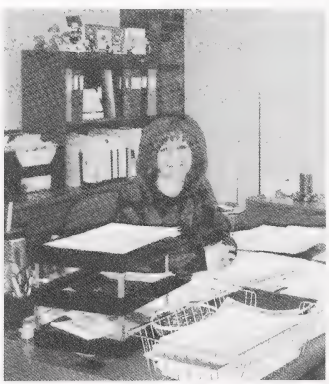
Recommendations for Organized Breast Cancer Screening Programs

Evidence-based literature and recommendations from the 1988 National Workshop Report,[8] *Screen Test's* 1990 Program startup goals and objectives, the 1993 National Forum on Breast Cancer,[9] the 2003 Quality Determinants of Organized Breast Cancer Screening Programs,[10] and the 2002 Guidelines for Monitoring Breast Screening Program Performance[11] help guide the Program's activities and provide benchmarks for evaluation. As new and relevant information becomes available, the Program attempts to adapt program measures to best practices.

The program components recommended for organized breast cancer screening programs in Canada and a description of how the Program incorporates these into its practices are listed below.

A population-based outcome goal

Since 1990, *Screen Test's* mission statement, six goals and twelve objectives have guided Program development, implementation and improvement. The ACB provides services to all RHAs in the province. Although most screening mammography in Alberta occurs outside of an organized screening program, the ACB continues to work with other organizations to move toward a province-wide consolidated screening program.



Mobile Services Coordinator

Information about the target population

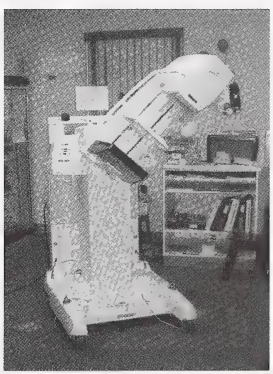
Screen Test collects information about women aged 40+ to use in planning and evaluation. The primary sources of data are the Alberta Cancer Board's *Screen Test* database, Alberta Cancer Board's Cancer Registry, Alberta Health and Wellness, the Census, and Statistics Canada. Where sources do not exist or are not available, *Screen Test* conducts random population-based surveys on breast cancer screening knowledge, attitudes and behaviours (KABs) to obtain the required information. These surveys, as well as other surveys conducted provincially and nationally, also provide information on those women who access screening outside of the Program.

Special emphasis on hard to reach groups

Screen Test continues to work towards its goal to increase awareness among Alberta women of the benefits of early detection in reducing mortality from breast cancer. By focusing on the objective to screen at least 70% of any identifiable subgroup (geographic location, ethnic origin, education, etc.) within five years of full implementation, *Screen Test* has encouraging results in collaborating with others to recruit women from rural areas, diverse ethnic origins, and lower education levels into regular screening practices.

Meticulous quality assurance

Screen Test continues to meet its objective of having 100% of mammography units and any other program elements subject to quality control standards meet those standards. *Screen Test's* radiologists and technologists meet or surpass relevant education, training and performance indicators recommended in the Quality Determinants of Organized Breast Cancer Screening Programs.[10] Equipment maintenance and quality control procedures adhere to international standards. All sites and mammography units within the Program are accredited by the Canadian Association of Radiologists (CAR) and the College of Physicians and Surgeons of Alberta, including the most recent addition to the mobile units: SophIE (Sophisticated Imaging Equipment).



"SophIE" (mobile mammography machine)

Outcome and data analysis

Screen Test's information system was designed to provide full access to all data collected for analysis. It is possible to conduct analyses on outcome indicators and evaluate objectives leading to the reduction of breast cancer mortality. Collaboration with other screening programs and the Canadian Breast Cancer Screening Initiative and Database ensures that *Screen Test* uses accurate, current and relevant performance measures for the screening program. This also allows for national and international comparisons of screening programs.

Information systems and linkages

Screen Test operates a centralized database and provincial breast screening application. This is a cornerstone to provide the best service possible to women throughout the province. Optical scanning of data forms provides an effective and efficient means of entering data directly into the database and application. In 2003, 60,000 forms were scanned, verified and entered into databases. This represents a 50% increase from 2002. A complementary barcode film tracking system ensures information is entered into the system in an efficient and timely manner and that film locations are always available.

A woman-centred focus

Screen Test's goal to be sensitive and responsive to the needs of the women of Alberta related to the prevention and early detection of breast cancer helps drive a woman-centred focus. Women are provided with breast health information and resources at clinic appointments, screening sites, and community presentations. *Screen Test* volunteers help to create a welcoming and comfortable environment by assisting with clinic appointments. Although mobile sites are temporary and determined by the Regional Health Authorities, the same woman-centred concepts are applied wherever possible.

Excellent coordination, with high quality diagnosis and followup

Screen Test's objective that all women with abnormalities should have adequate followup requires assessing results of diagnostic tests undertaken as a consequence of screening. The Program proactively tracks data on women requiring diagnostic work-up until a final diagnosis is made and, if necessary, cancer staging is completed; less than 1% are lost to followup. This ensures that women do not fall between the cracks and get overlooked for recommended diagnostic tests.

***Screen Test* mobile mammography machine arriving for setup**

Summary

The *Screen Test* Program is comprised of the essential components of an organized breast cancer screening program. The combination of enhanced early detection and improved treatment will likely ensure that the mortality rate due to breast cancer will continue to decline in Alberta.

Program Outcomes

This section summarizes the information and data gathered by *Screen Test* on the geographic reach of the target population, client profile and screening results for the 2001/03 fiscal years.

Geographic Reach of the Target Population

An evaluation of age and geographic targets provides a measurement of *Screen Test's* objectives to reach at least 80% of Alberta women aged 50 - 69 years, with no less than 70% of any particular subgroup. These original objectives are not as relevant now as the Program has not been implemented as initially envisioned. The information collected for this measure refers to the women attending *Screen Test*; it does not include the women attending mammography services outside of the Program.

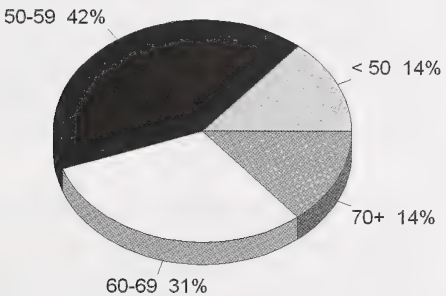
The 2001/03 period showed a 5.5% increase in the total number of visits.

Age at appointment

As shown in Figure 1, 73% of the women attending *Screen Test* were in the target age group of 50 - 69, although women 40+ are welcome in the Program. The mean age of women attending *Screen Test* during this two year period was 59.2 (age of client at initial visit during 2001/03).

There was an increase in the number of visits by women under 50 years of age (40 - 49) compared to the 1999/01 fiscal years. Women in this age group are on an annual recall[12] and therefore may have had a mammogram twice within the two year reporting period.

Figure 1: Age Group at Appointment



Screen Test Visits

Screening services are provided at fixed sites in both Calgary and Edmonton, and throughout the province by three mobile mammography units transported by converted vans. The appointment totals vary among the three mobile mammography service areas due to differing population densities. The mobiles often overlap areas to accommodate fluctuating appointment schedules and sometimes work in the urban areas for special community projects. Table 1 shows the total number of *Screen Test* appointments from 2001/03. Compared to the 1999/01 fiscal years, there was a 5.5% increase in the number of visits.

Table 1

Screen Test Visits, 2001 April – 2003 March	
Site	**Site Totals**
Calgary	11,549
Edmonton	9,646
Mobile 1 (serving north-central Alberta)	11,522
Mobile 2 (serving more distant regions in northern Alberta)	7,019
Mobile 3 (serving southern Alberta)	7,131
Total Visits	46,867

In addition to the appointments listed in Table 1, *Screen Test* continued to work with the Saskatchewan Cancer Foundation's Screening Program for Breast Cancer in the provincial border community of Lloydminster. In a reciprocal agreement to screen each other's clients every two years to avoid having two separate programs in the same community at the same time, *Screen Test* screened 100 Saskatchewan clients in 2001. In collaboration with the Northwest Territories (NT) sites of Hay River and Fort Smith, *Screen Test's* equipment and staff were used to screen 267 women in 2001 and 305 women in 2003. The NT and Saskatchewan screening programs oversaw the appointment recruitment and diagnostic followup.

Screen Test provided mobile mammography services to 6 new sites in 2001/03, totalling 111 sites.

Table 2 shows the number of women screened by RHA of residence. *Screen Test* collaborates with each RHA to determine available and appropriate mobile site locations. Suitable sites must pass a 15 point checklist, as well as meeting guidelines on 12 other space requirements. Consequently, few women need to travel outside the RHAs in which they live to obtain high-quality screening mammography from *Screen Test*. Some women obtain screening services when they travel to urban centres for other reasons. At the *Screen Test* fixed site locations 5% of Calgary and 9% of Edmonton clients were from outside areas.

The map in Figure 2 shows the *Screen Test* mobile sites by RHA. *Screen Test*, in collaboration with RHAs, has succeeded in establishing over 100 mobile mammography sites through the province. Effective 2003 April, the RHA boundaries were changed, reducing the number of regions from 17 to nine. Figure 2 illustrates the previous (gray lines), and the new (black lines) boundaries.

Changing boundaries resulted in some sites moving between RHAs. Six new mobile sites were added in 2001/03: Black Diamond, Eden Valley, Olds, Ponoka, Rocky Mountain House, and Frog Lake. In total, *Screen Test* provided services in 111 sites. Since the temporary mobile site locations depend on the availability of suitable locations in the RHAs, sites were diverse and included: Health Unit offices, hospitals, churches, First Nations Community Centres, community halls, senior's centres, shopping malls, Legion Halls, Colleges, and provincial buildings.

Table 2

***Screen Test* Visits by RHA of Residence 2001 April – 2003 March**		
Regional Health Authority	**Mobile Site Locations**	**RHA Totals**
1. Chinook	Blairmore, Brocket, Cardston, Fort Macleod, Milk River, Pincher Creek, Standoff, Taber	2,050
2. Palliser	Bassano, Bow Island, Brooks, Foremost, Oyen	1,454
3. Headwaters	Banff, Black Diamond, Canmore, Claresholm, Eden Valley, High River, Morley, Nanton, Okotoks, Vulcan	2,589
4. Calgary	(Calgary Fixed Site), Multiple Mobile Inner City Sites, Tsuu T'ina	11,834
5. Health Authority 5	Carstairs, Didsbury, Drumheller, Siksika, Strathmore, Three Hills	753
6. David Thompson	O'Chiese, Olds, Ponoka, Rocky Mountain House, Sunchild	1,618
7. East Central	Camrose, Coronation, Daysland, Killam, Kitscoty, Lloydminster, Provost, Stettler, Vermilion, Wainwright	3,114
8. West View	Edson, Evansburg, Hinton, Jasper, Spruce Grove, Stony Plain	1,871
9. Crossroads	Breton, Drayton Valley, Hobbema, Wetaskiwin	1,032
10. Capital	(Edmonton Fixed Site), Multiple Mobile Inner City Sites, Beaumont, Leduc, Thorsby	10,514
11. Aspen	Athabasca, Barrhead, Boyle, Legal, Morinville, Onoway, Redwater, Sangudo, Swan Hills, Westlock, Whitecourt	3,019
12. Lakeland	Bonnyville, Cold Lake, Elk Point, Fort Saskatchewan, Frog Lake, Lac La Biche, Lamont, Saddle Lake, St. Paul, Smoky Lake, Vegreville	3,691
13. Mistahia	Beaverlodge, Fairview, Fox Creek, Grande Cache, Hythe, Silver Valley, Spirit River, Sturgeon Lake Band, Tangent, Valleyview, Worsley	1,563
14. Peace	Grimshaw, Manning, McLennan, Peace River	736
15. Keeweetinok	High Prairie, Red Earth Creek, Slave Lake, Wabasca	604
16. Northern Lights	Anzac, Chard, Conklin, Fort Chipewyan, Fort MacKay	77
17. Northwestern	Fort Vermilion, High Level, La Crete	348
	Total Visits:	**46,867**

Figure 2:

Screen Test
Mobile Mammography Sites

Alberta Health Regions 1 to 17
(2001 Jan - Mar)

Alberta Health Regions R1 to R9
(2003 Apr - Dec)

Client Profile

Women who attend for screening are asymptomatic and healthy, so they are referred to as clients rather than patients. A description of the demographic characteristics and screening behaviours of *Screen Test's* clients helps measure the Program's success in reaching population-based outcome goals and objectives. This section describes the characteristics and breast health practices in more detail for women attending *Screen Test* in the 2001/03 fiscal years.

Screening mammography within an organized program is the most effective tool for the early detection of breast cancer.[7] Women aged 50 - 69 are encouraged to obtain biennial screening mammography and an annual clinical breast examination (CBE) from a physician or health professional. Women are also encouraged to be aware of their own breast characteristics and see their doctor if they find changes.

Screening Mammograms

One of the best predictors of a woman getting a screening mammogram is having had a previous screening mammogram. Table 3 shows the self reported interval between mammograms. Most women reported that they had at least one mammogram in the past three years, some of which may have been performed outside of the Program. There were slightly more rural woman receiving their first mammogram, highlighting *Screen Test's* success in bringing screening to women. As a result of *Screen Test's* annual visits to mobile sites, the proportion of women never having had a mammogram has substantially decreased.

Community Display Volunteer

Table 3

Self Reported Last Mammogram, 2001 April - 2003 March			
Site	**Less than 3 years ago**	**More than 3 years ago**	**Never had one**
	%	**%**	**%**
Calgary	88.2	4.4	7.4
Edmonton	89.6	3.9	6.6
Mobile 1	83.1	8.1	8.7
Mobile 2	85.3	6.6	8.1
Mobile 3	85.8	6.2	8.0
Overall Total	86.4	5.8	7.7

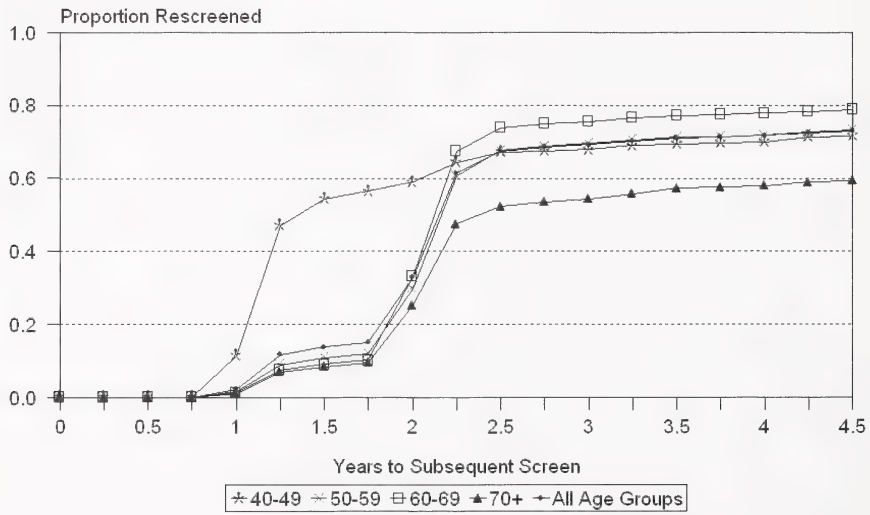
Retention

In order for screening to have the greatest impact it is important that women return for mammograms at regular intervals. The cumulative probability function determines the probability of a woman who had a mammogram in 1999/01 to subsequently return for a screening within six months of her screening due date. As shown in Figure 3, 67.5% of women who had a mammogram in 1999/01 returned within 2.5 years for a subsequent screening. This information refers to women returning to *Screen Test;* it is not known how many women attend subsequent screening outside of the Program.

70% of women 50 - 69 returned for screening within 6 months of their due date.

There was a slight increase from the previous biennial interval. In 1999, *Screen Test* began sending recall cards to women aged 40 - 49 who are on an annual recall schedule, as recommended in the Clinical Practice Guidelines.[12] This resulted in a significant increase in the probability of women aged 40 - 49 returning to screening within six months of their one-year screening due date.

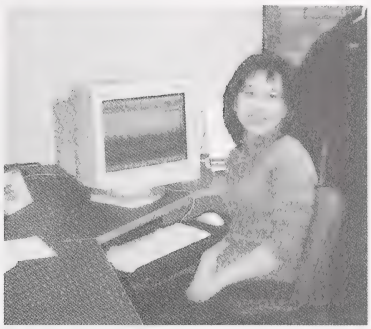
Figure 3: Cumulative Probability of Women—by Age Group—Screened in 1999/01 Returning for Subsequent Screen



It is interesting to note that women aged 60 - 69 had a higher probability of returning to screening than women aged 50 - 59, which seems contrary to research that suggests older women are more difficult to recruit and retain. These divergent findings can be explained by examining the influence of the number of previous screens on the probability of returning for screening.

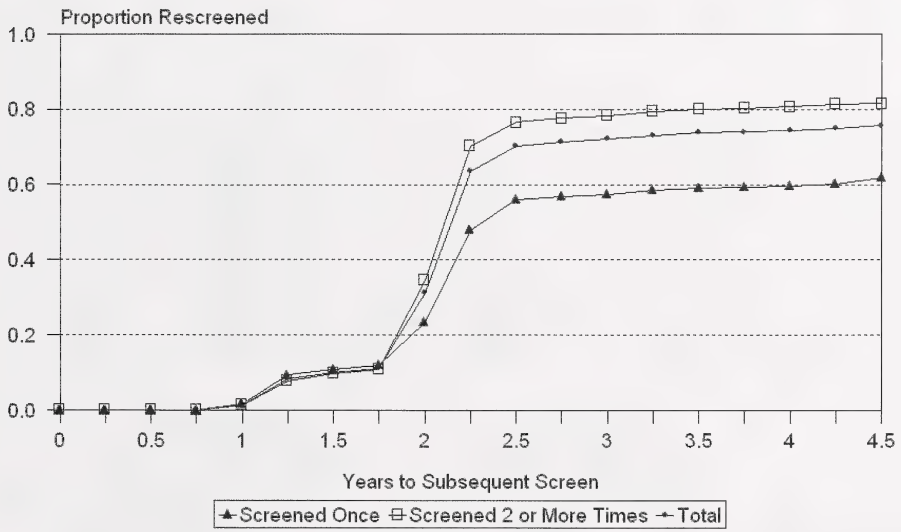
As shown in Figure 4, 70% of women aged 50 - 69 that had a screen in 1999/01 returned for a subsequent screen in 2001/03. This is slightly higher than in the previous biennial interval. However, there is a 20% difference in the probability of women returning after one previous visit and women returning after two or more previous visits. Approximately 76% of women

who had two or more previous visits returned within six months of their due date, whereas only 56% of those with one previous visit returned. This difference is more salient for women aged 60 - 69 because there are fewer older women recruited into the Program for their first visit. Many of the women who began screening in their fifties, however, continue to get mammograms in their sixties. These findings support previous research that found that older women are easier to recruit if they have previously participated in screening.[13] These findings also indicate that more work is needed to improve the proportion of women returning to *Screen Test* for their second visit.



***Screen Test* staff**

Figure 4: Cumulative Probability of Women Aged 50 - 69 Screened in 1999/01 Returning for Subsequent Screen

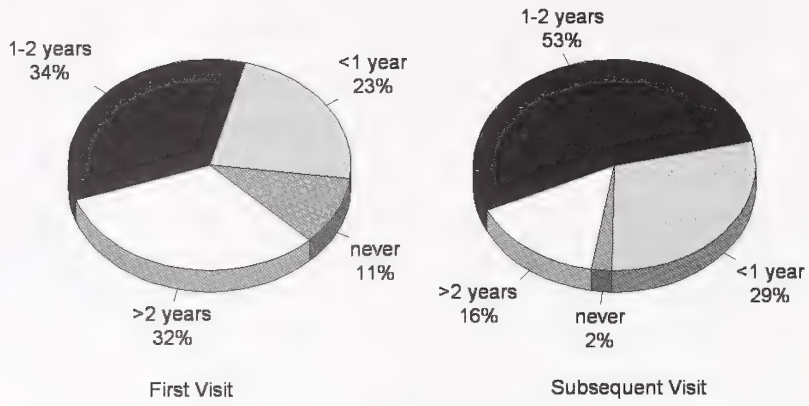


Annual Clinical Breast Examination (CBE)

The CBE practices of *Screen Test* clients are relatively stable. The Program appears to have a positive and consistent impact on promoting regular CBE. *Screen Test* clients are reminded to see their family physician or a health professional for an annual CBE. This message is communicated through videos, pamphlets and presentations, as well as the result letters to women.

As shown in Figure 5, the proportion of women who reported having a CBE in the past two years increased from 57% at the time of the first visit to 82% at subsequent visits. The proportion of women reporting that they had never had a CBE decreased from 11% at time of first visit to 2% at subsequent visits.

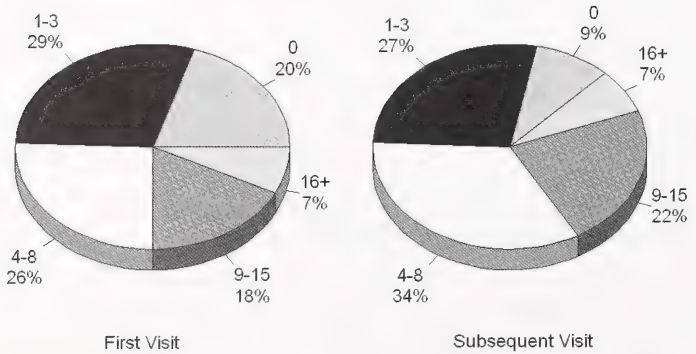
Figure 5: Clinical Breast Examination – Years Since Last CBE



Regular Breast Self-Examination

Women's awareness of their own bodies remains an important focus for a healthy women's program; however, BSE has not been shown to significantly reduce mortality due to breast cancer.[14] In keeping with our mandate of maintaining best practices based on current research, *Screen Test* no longer recommends monthly BSE using specific techniques. Women are encouraged to look for any signs or changes in their breasts and report them to their doctor. See Figure 6 for changes in frequency from first to subsequent visits.

Figure 6: Breast Self Examination – Frequency of Women Performing BSE Per Year



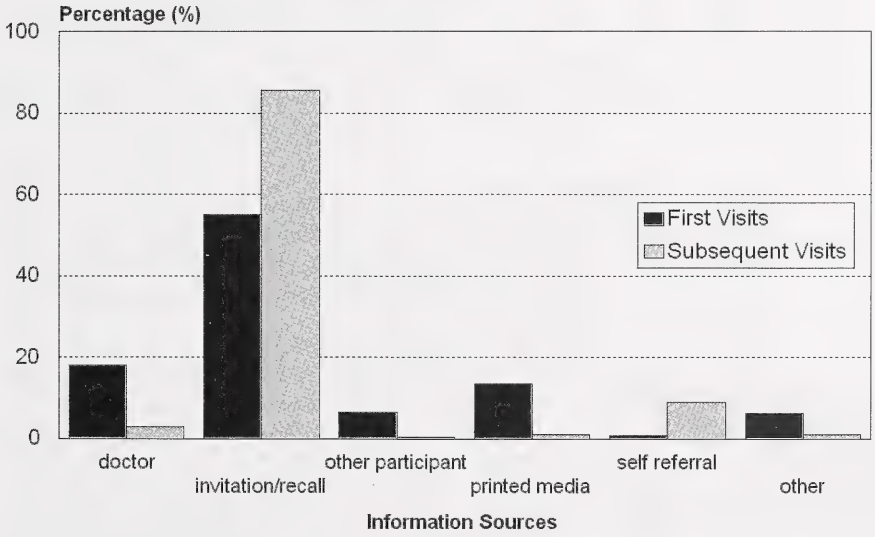
Information Sources

Screen Test engages in numerous activities intended to increase women's participation in breast cancer screening. To help assess the effectiveness of various recruitment activities, women are asked about their most important source of information about the Program at the time of appointment booking. As shown in Figure 7, letters of invitation, physician contact, and printed media continue to be the most important sources of information. Only women

who have never been screened receive letters of invitation; therefore the effectiveness of letters of invitation decreases over time.

An important component of a successful screening program is retention. That is, women who have had at least one mammogram return for another one as part of regular screening. A retention strategy used by *Screen Test* is the recall card. This card is mailed out 1 - 2 months before a woman is due for her next appointment. As shown in Figure 7, a significant proportion of women reported that the recall card was the most important source of information for their subsequent visit. These findings support research that has found that personal correspondence is an effective strategy for recruitment and retention.[15]

Figure 7: Information Sources – First and Subsequent Visits, 2001/03

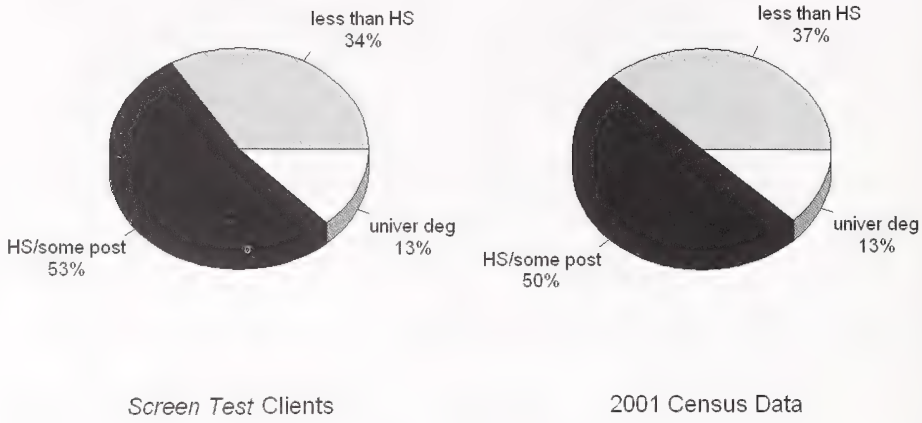


Education Levels

Comparing the education levels of women in the general population with women who attend *Screen Test* helps determine whether the Program is effectively reaching women of different education levels similar to the distribution in the general population. Figure 8 presents the comparison of *Screen Test* clients' highest level of education with the 2001 Census data and indicates that *Screen Test's* clients are representative of the general population. This is an important finding as reaching women with less than high school education is more difficult than recruiting women with post-secondary education.

Breast screening information display

Figure 8: Highest Education Level 2001/03 *Screen Test* Clients vs. 2001 Census*



Ancestral Ethnic Background

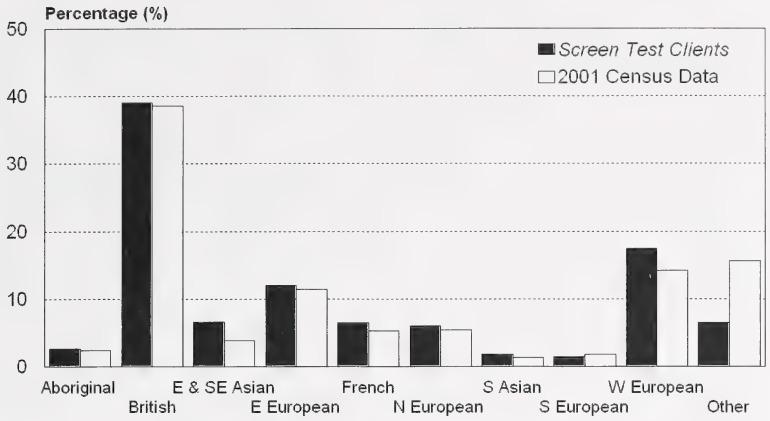
The immigration and settlement patterns of Alberta show that over half of the population derives from British and Western European ancestral ethnic backgrounds. The diversity of Alberta is most prominent in the urban centres of Calgary and Edmonton.

LORAD M-IV mammography machine at *Screen Test* Edmonton

Screen Test's objective to screen no less than 70% of any particular subgroup requires the collection of demographic information, including ethnic background. This information is collected at the first *Screen Test* visit only. Figure 9 shows how information collected from clients compares to the 2001 Census data. *Screen Test's* efforts to recruit and retain hard-to-reach groups have been successful. In-reach projects working with the East and Southeast Asian (Chinese, Vietnamese and Filipino), South Asian (Indo-Canadian, Ismaili and Sikh), and Aboriginal communities continue to progress in the urban areas. The mobile sites in the rural areas include 13 sites physically located in First Nations' communities as well as numerous sites adjacent to Aboriginal communities. Mobile sites also include various French communities.

Overall, *Screen Test's* collaboration with diverse communities throughout Alberta helps the Program reach many hard-to-reach groups.

Figure 9: Ancestral Ethnic Group Origin 2001/03 *Screen Test* Clients vs. 2001 Census*



*Total females aged 45+, total responses

Risk Factors

In addition to early detection, the identification of risk factors is an important component in the fight against breast cancer. *Screen Test* includes an individual risk profile of each client in the result letter that is sent to her physician to highlight the major and minor risk factors.

Major risk factors include age greater than 50, birthplace in North America or Europe, and two or more family members with breast cancer. Each of these risk factors has an estimated relative risk of 4.0 or greater.[4]

As shown in Table 4, most women attending *Screen Test* are at high risk because of their age and place of birth. Although, for many women, family history of breast cancer is perceived to be a greater risk factor than age or place of birth, only a small percentage of women have two or more family members with breast cancer.[16]

Table 4

Major Breast Cancer Risk Factors, 2001 April - 2003 March		
Factor	**Response**	**%**
Age greater than 50	Yes	86.1
Birthplace North America or Europe	Yes	88.9
Two or more family members with breast cancer	Yes	0.6

Other risk factors for breast cancer are shown in Table 5. The most common of these is menarche before age 12; 18% of the women reported this risk factor. The relative risks for age at first birth, nulliparity, and menarche range

between 1.1 and 2.0. The relative risks for biopsies and one first degree relative with breast cancer range between 2.1 and 4.0.[4]

Although the identification of risk factors is important, few of these factors can be easily modified. Early detection remains the best tool for reducing mortality from breast cancer.

Early detection remains the best tool for decreasing mortality from breast cancer.

Table 5

Other Breast Cancer Risk Factors, 2001 April – 2003 March		
Factor	**Response**	**%**
Age at first birth greater than 35	Yes	1.8
More than two breast biopsies	Yes	3.2
Nulliparity	Yes	10.5
Menarche before age 12	Yes	18.0
One first degree relative with breast cancer	Yes	10.8

Screening Results

This section describes mammogram results as well as the outcomes of diagnostic tests undertaken as a result of *Screen Test* recommendations for further followup. Because of the time interval between mammogram results and the completion of followup, approximately 1% of women were still in followup at the time of writing and were not included in the diagnostic followup results.

Result Letters

Following a screening appointment, *Screen Test* sends a mammogram result letter to the client and her physician. *Screen Test's* objective is to send 95% of letters within two weeks of the appointment date. Time delays can occur when comparison films are requested from clinics outside the Program. As shown in Table 6, over 97% of women were sent their result letters within 15 days of their mammogram appointment, a 3% increase over the previous reporting period.

Table 6

Days Until Client Letter Sent 2001 April - 2003 March	
	%
1 - 5 days	17.4
6 - 10 days	72.8
11 - 15 days	6.9
16 or more days	2.9
Total	100.0

Further Investigation

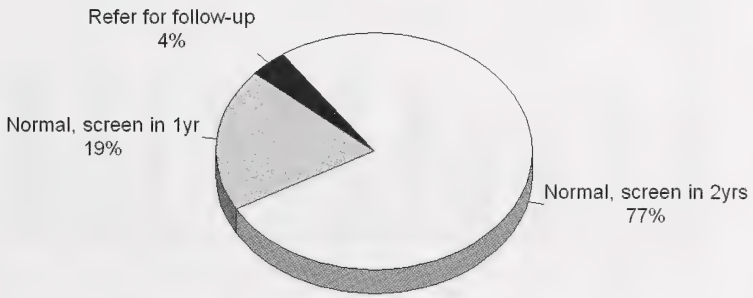
A priority of *Screen Test* is to work in partnership with women's physicians to ensure that women who receive abnormal results are followed up appropriately. When a woman's mammogram results indicate that further investigation is required, the physician's result letter is sent before the woman's result letter. This practice ensures the physician is prepared to answer the woman's questions and arrange for her followup. If the diagnostic followup has not been arranged within 2 - 3 weeks after the result letter was sent, the physician's office is contacted. Two months after diag-

nostic followup has been initiated, *Screen Test* requests and tracks the diagnostic workup results until a final outcome is determined.

Recommendations from Mammography Results

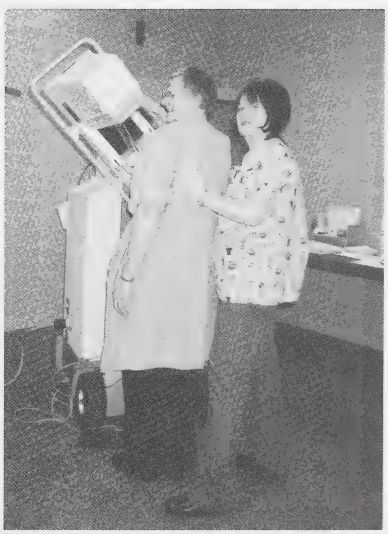
There was no mammographic evidence of breast cancer for approximately 96% of the women who attended *Screen Test*. As shown in Figure 10, 77% of these women were advised to return for screening in two years; 19% were advised to return in one year. The recommended intervals for screening visits vary because of age and radiologist recommendation. For example, shorter intervals between screenings may be recommended for women who present with very dense breasts or benign lesions. There has also been an increase in one-year recalls because, as recommended by the Clinical Practice Guidelines,[12] women aged 40 - 49 are recalled on an annual basis. Most women aged 50 - 69 return to a two year screening interval.

Figure 10: Screening Results, 2001/03



Abnormality Rates

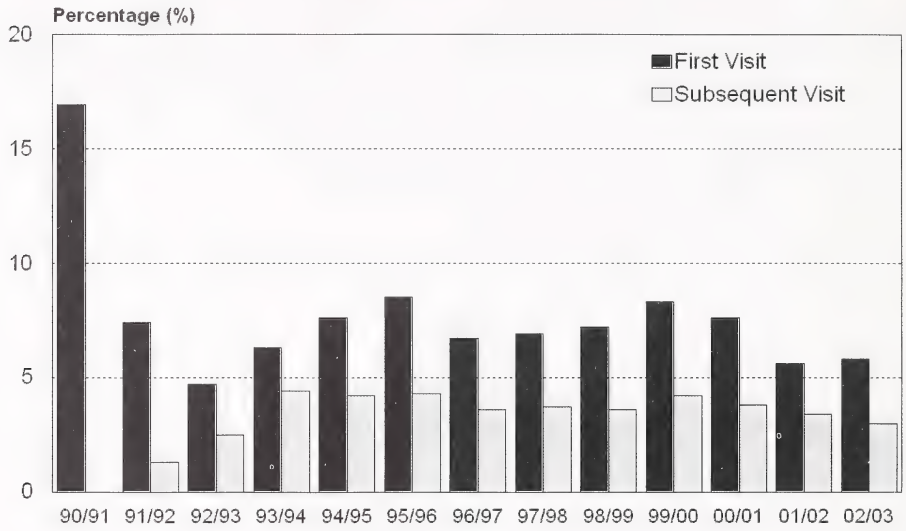
First visits tend to result in higher abnormality rates than subsequent visits, reflecting prevalent abnormalities among previously unscreened women (see Figure 11). For first visits, Australian,[17] United Kingdom[18] and Canadian Screening Programs[11] recommend the target for abnormality rates be less than 10%. The European[19] recommended target is less than 7%. For subsequent visits, the recommended targets are less than 7%[11, 18] and less than 5%[17, 19] respectively. *Screen Test* continues to meet national targets and international standards; abnormality rates were 5.7% for first time visits and 3.2% for subsequent visits over the last two years. These abnormality recall rates are some of the lowest among Canadian screening programs,[20] likely a benefit of the Program's use of a core group of radiologists reading high volumes of screening mammograms since Program inception.



Mobile mammogram demonstration

Lower abnormality call rates are important because they indicate that fewer women are subjected to potential psychological and physiological harm that can result from false positive results that lead to further investigation. However, too low an abnormality call rate can have an adverse effect on cancer detection rates. Therefore, abnormality rates should be interpreted in conjunction with cancer detection rates and positive predictive values, which are found in the following section of this report.

Figure 11: Abnormality Rates - 1 yr intervals, 1990 Oct - 2003 Mar



Outcome Indicators

The outcomes of investigation following abnormal results are collected as indicators of the Program's effectiveness in the early detection of breast cancer. Based on recommendations put forward by the Database Management Committee (DMC) of the Canadian Breast Cancer Screening Initiative for defining the end of a screening episode, *Screen Test* adopted early closure of diagnostic followup by halting followup inquiries by eight months, which was essentially the receipt of the second recommendation for repeat films in six months. This allows *Screen Test* to report on approximately 99% of diagnostic outcomes resulting from abnormal screening results from the 2001/03 fiscal years. The average number of days to closure is 90, which varies according to practices in the diagnostic community. Table 7 shows the outcome indicators by age group, excluding the data for women who are still in followup (n=17).

Loading the LORAD Transpo

As shown in Table 7, most of the cancers detected were found in the 50 - 69 age group. The abnormal call rate decreased with age, while the positive predictive value increased with age. Definitions for cancer detection rate targets and standards vary. *Screen Test* achieved cancer detection rates of 7 per 1,000 for prevalent screens and 4 per 1,000 for incident screens among women 50 - 69 (combined rate not shown in Table 7), meeting those standards that include in situ cancers.[17] *Screen Test* achieved for women 50 - 69 cancer detection rates of 4 per 1,000 for initial and 3 per 1,000 for re-screens (not shown), meeting those standards for initial screen[18] and targets for re-screens[11] that exclude in situ cancers.

Screen Test meets Canadian targets for re-screen cancer detection rates, positive predictive value and benign to malignant biopsy ratios.

The proportion of abnormal cases where cancer is detected gives an indication of the positive predictive value of screening mammography. The overall 12% positive predictive value indicates that *Screen Test* is doing an effective job of identifying mammographic abnormalities that indicate breast cancer among the screened women. This meets and surpasses the Canadian target and is among the highest in Canadian screening programs.[11,20] In addition, the low benign to malignant ratio from open biopsy indicates that recommendations for followup subject very few women to unnecessary invasive procedures, meeting national and international targets and standards.[11,17,18]

Table 7

Outcome Indicators by Age Group, 2001/03

Outcome Indicator	Age at Exam				
	< 50	50 - 59	60 - 69	70 +	Total
Number of Exams, n (%)	6511 13.9%	19477 41.6%	14308 30.5%	6554 14.0%	46850 100%
Number of Cancers, n	11	69	66	69	215
Abnormal Call Rate (%)	4.5%	4.0%	3.5%	3.3%	3.8%
Cancer detection rate per 1000 prevalent incident total	 2.8 1.1 1.7	 5.1 3.3 3.5	 12.7 4.1 4.6	 16.4 10.1 10.5	 6.3 4.3 4.6
Positive Predictive Value of Screening Mammography (%)	3.7%	8.8%	13.0%	31.7%	11.9%
Biopsy Yield Ratio (%) benign: malignant	0.0% -	30.0% 2.33 : 1	52.6% 0.90 : 1	60.0% 0.67 : 1	39.8% 1.51 : 1

* Excludes 17 cases in progress

Prognostic Features

Table 8 presents the prognostic features for cancers detected in 2001/03. Of the 215 cancers detected, 20% were in situ or non-invasive. The proportion of in situ cases detected by *Screen Test* is relatively stable and comparable for screening programs.[11,17,18] *Screen Test* meets its objective to monitor the number of cases of breast cancer which at diagnosis are in situ and non-invasive. Invasive tumour size and stage are used as indicators of screening effectiveness; tumours should be small and the cancer should be in an early stage. The national target and International standard for tumour size is that greater than 25% should be 1.0 cm or less.[11,19] *Screen Test* surpasses this; 38.9% of tumours found were 1.0 cm or less.

Table 8

Prognostic Features by Age Group, 2001 April - 2003 March

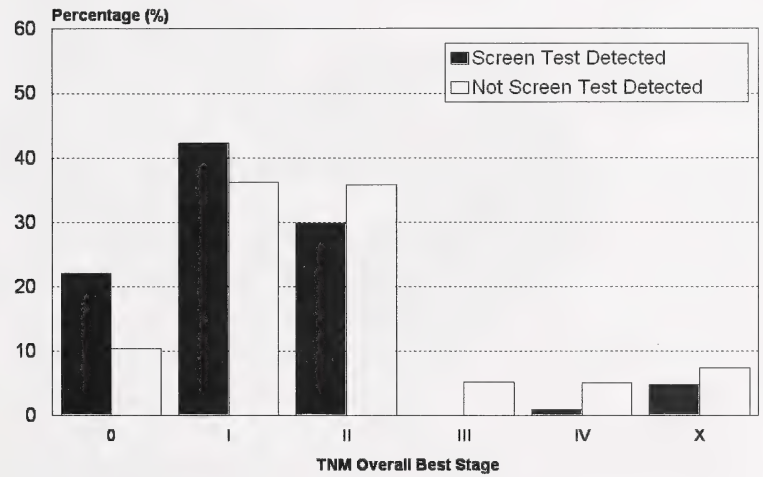
Outcome Indicator	Age Group				
	< 50	50 - 59	60 - 69	70 +	Total
Total Number of Cancers	11	69	66	69	215
Histologic Type					
in situ	0 (0.0%)	19 (27.5%)	12 (18.2%)	12 (17.4%)	43 (20.0%)
invasive	11 (100.0%)	50 (72.5%)	54 (81.8%)	57 (82.6%)	172 (80.0%)
Invasive Tumour Size (cm)					
≤ 1.0	5 (45.5%)	20 (41.7%)	20 (37.7%)	20 (36.4%)	65 (38.9%)
1.1 - 2.0	3 (27.3%)	17 (35.4%)	22 (41.5%)	25 (45.5%)	67 (40.1%)
2.1 +	3 (27.3%)	11 (22.9%)	11 (20.8%)	10 (18.2%)	35 (21.0%)
unknown		(2)	(1)	(2)	(5)
median tumour size	1.2	1.2	1.5	1.5	1.3
Axillary Node Involvement					
none removed			2 (3.7%)	4 (7.1%)	6 (3.5%)
negative	5 (45.5%)	28 (57.1%)	38 (70.4%)	40 (71.4%)	111 (65.3%)
positive	6 (54.5%)	21 (42.9%)	14 (25.9%)	12 (21.7%)	53 (31.2%)
unknown		(1)		(1)	(2)
TNM Stage Grouping					
I	4 (36.4%)	24 (50.0%)	33 (63.5%)	38 (70.4%)	99 (60.0%)
II	7 (63.6%)	22 (45.8%)	18 (34.6%)	14 (25.9%)	61 (37.0%)
III		1 (2.1%)		1 (1.9%)	2 (1.2%)
IV		1 (2.1%)	1 (1.9%)	1 (1.9%)	3 (1.8%)
X		(2)	(2)	(3)	(7)

The goal of an organized screening program is to detect cancers at an earlier stage than what would have been found through other means so that more treatment options are available to increase survival. The test of this is to compare the cancers detected from the Program and those detected through

other means in Alberta. As a result of a pilot project undertaken with the Alberta Cancer Registry (see research), staging data was available on all breast cancer cases in 2001. In 2001, *Screen Test* detected more stage 0 (in situ or non-invasive) and stage 1 (less than 2 cm in size) earlier cancers than those diagnosed outside of the Program through either opportunistic screening or symptomatic diagnostic investigation (see Figure 12). As well, *Screen Test* detected fewer stage III (node positive) and stage IV (metastatic) cancers. This indicates that *Screen Test* is meeting its goal to provide a high quality, cost effective screening program designed to interrupt the disease process of breast cancer at the earliest possible stage.

Screen Test-detected cancers were found at an earlier stage than those detected outside the program.

Figure 12: 2001 Program vs. Non-Program Detected Cancer Stage



Diagnostic Followup

Following a screen detected abnormality, women are referred back to their physician for a physical exam, and various diagnostic procedures are undertaken to reach a final diagnosis. A total of 5,523 diagnostic procedures were performed on 1,765 women. The median number of procedures performed was 2 (mean = 2.4). Table 9 presents information regarding how often each of the diagnostic procedures are used. Standard or special views continue to be the most common diagnostic test, followed by ultrasound and physical exam. The use of core biopsy in the diagnostic community continues to increase.

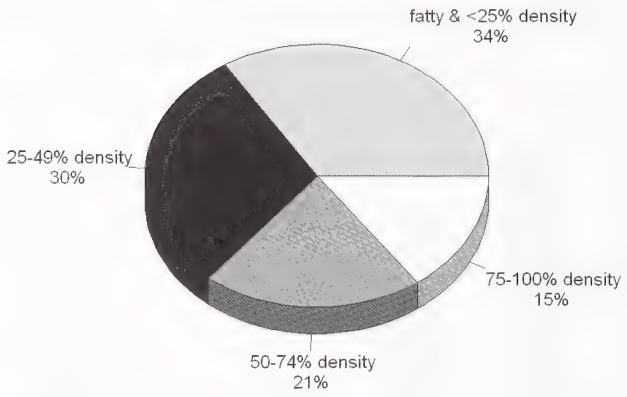
Table 9

Diagnostic Procedures 2001 April - 2003 March	
Diagnostic Procedure	**%**
Core biopsy	7.7
Fine needle of fluid aspirate	2.5
Needle localization biopsy	1.0
Open biopsy	0.9
Other surgical consultation	4.7
Physical exam	23.8
Standard or special views	32.3
Ultrasound	27.2
Total	100.0

Fibroglandular Tissue Density

The ability to detect abnormalities through mammography can be affected by breast density; sensitivity decreases with increasing breast density.[7] The distribution of fibroglandular breast tissue density in women attending *Screen Test* is shown in Figure 13. Approximately 15% of women screened had 75 - 100% density. Breast density tends to decrease with age; however, hormone replacement therapy can increase the density in older women, affecting the image of the mammogram.[7] Therefore, it may be recommended that women with very dense breasts return to screening annually rather than biennially. About 30% of *Screen Test* clients reported hormone use at their last visit.

Figure 13: Fibroglandular Tissue Density, 2001/03 Fiscal Years



Summary

The collection, analysis, comparison and reporting of program outcomes is important in gauging the Program's effectiveness in the early detection of breast cancer. *Screen Test* often meets and sometimes surpasses the many targets, performance indicators and standards applied to breast cancer screening programs. Detecting cancers at an early stage is one of the most important factors in improving survival after diagnosis.

Community Mobilization

Community mobilization, with its focus on increasing women's awareness of breast health and the importance of early detection, continued to engage in many varied activities. Highlights of these activities are outlined below.

Volunteers

- Volunteers continued to make a significant contribution to the Program's effectiveness, donating generously of their time at *Screen Test* in Edmonton, Calgary, and rural Alberta mobile sites. In the reporting period 2001/03, volunteers put in over 14,000 hours. *Screen Test* is very fortunate that many of the volunteers return each year to assist at the various sites.
- Volunteers received training regarding their responsibilities under the Health Information Act ensuring that clients' privacy is protected.

Health Promotion and Education

- Women's awareness of the importance of breast cancer screening was raised through numerous displays and presentations at various sites including seniors' centres, flu clinics, work sites, health conferences, and community fairs.
- Two new resources were developed--a slide guide and a Q & A sheet to answer women's questions about the mammography procedure.
- Print resources and web site information were updated and/or produced to reflect the extensive research that concluded that mammography is the most effective method for early detection and breast self-examination is less effective.

In-Reach / Outreach

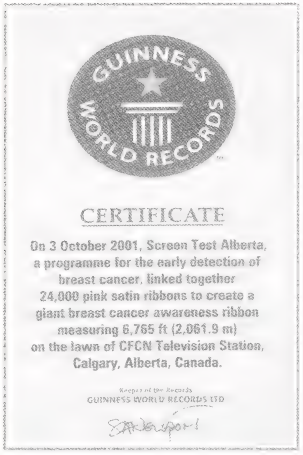
As a result of research, the community mandate changed to focus on specific groups of women who are under-served in screening mammography due to barriers such as culture, language, and distance. Specific strategies employed to reach these women included:

- Providing mobile clinics in Aboriginal communities and in the respective communities of Chinese, Punjabi, Hindi, and Vietnamese speaking women;
- Providing block appointment bookings and transportation for seniors groups and communities where access to mammography services is limited; and
- Conducting focus groups with under-served groups to identify needs and strategies for breast health.

Chinese community in-reach

New Initiatives

- The province-wide 'Ribbon of Hope' campaign initiated in October 2000 successfully concluded in 2001. *Screen Test* was awarded a Guinness World Record for 10 kilometers of signed, linked pink ribbons.
- The 'Buddies for Life' program partnership was initiated with CFCN television in Calgary. This program provides information to the public on breast health.
- The 'Body & Soul' project was initiated among various churches in Edmonton. Women's groups and representatives within various churches were contacted to provide information about *Screen Test* and initiate planning of breast health workshops to be held at the church. The project hopes to use peer educators to increase awareness of breast health.
- In 2002, Community Mobilization Coordinators (CMCs) working with the mobile program were replaced with Community Mobile Assistants (CMAs). In the past, *Screen Test* hired health professionals as CMCs, the majority of whom were nurses, to coordinate activities for the larger biennial visits. A review of the CMC activities revealed that the majority of their time was spent obtaining an appropriate mobile site and overseeing the volunteers. As nursing qualifications were not required for these tasks, the decision was made to replace CMCs with CMAs, who are not nurses. This decision resulted in significant cost savings for the Program, allowing the *Screen Test* to hire CMAs for annual visits rather than biennial visits only.


GUINNESS WORLD RECORDS

CERTIFICATE

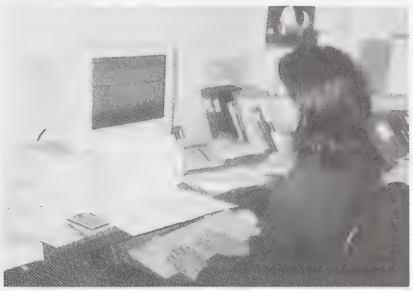
On 3 October 2001, Screen Test Alberta, a programme for the early detection of breast cancer, linked together 24,000 pink satin ribbons to create a giant breast cancer awareness ribbon measuring 6,765 ft (2,061.9 m) on the lawn of CFCN Television Station, Calgary, Alberta, Canada.

Keeper of the Records
GUINNESS WORLD RECORDS LTD

Guinness World Records certificate

Research

As part of the Program's goal to promote the increase of scientific knowledge in the areas related to women's health issues and the reduction in mortality from breast cancer, *Screen Test* participates in breast cancer screening research projects. All research projects are submitted to the Alberta Cancer Board's Research Ethics Board for review and approval, as well as quality assurance and evaluation. Research from 2001/03 is described below.

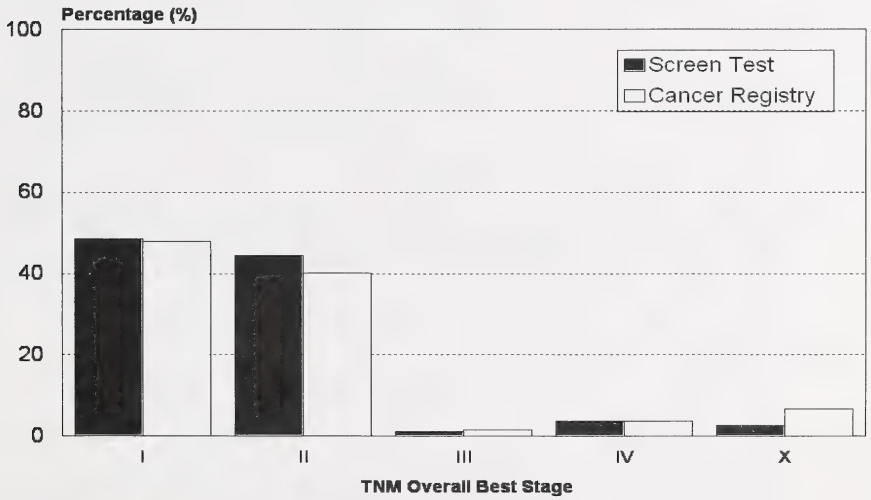


Analyst at work

Cancer Staging Pilot Project (2001-2003)

The goal was for the Cancer Registry (CR), in collaboration with the cancer screening programs, to develop and implement a process to produce cancer staging information for breast cancers. The objectives of the project included engaging the CR in staging breast cancers, ensuring the CR produced consistent and interpretable staging, and creating expert staging resources within the CR. The project met its objectives and promoted cooperation between the CR, the cancer screening programs, Alberta Cancer Board clinicians, and staging experts. The CR continued to stage breast cancers diagnosed in 2001 onwards.

Figure 14: 2001 *Screen Test* vs. Cancer Registry Staged Cancers



Up until the Cancer Staging Project, the Alberta Cancer Registry did not stage breast cancers except for specific research studies. Most of the staging was done by the clinicians treating the cancer. *Screen Test* stages its program-detected cancers using the UICC/AJCC TNM rules. As shown in Figure 14, the overall best stage determined independently by *Screen Test* and the Cancer Registry in the Cancer Staging Pilot Project are very consistent and reproducible. This is very reassuring as the Program moves to using the staging information from the Cancer Registry in the *Screen Test* application and database.

Retention Survey (2001)
Given that a third of women screened were not returning for subsequent mammograms, a project to investigate factors affecting women returning for subsequent screens was undertaken. Over 1400 surveys with items on screening awareness, values, recall, reasons for having/not having another mammogram and appointment preferences were mailed to women. Differences in responses across age, education, location, and mammogram results were found.

Mobile Technologists

Retention Followup Pilot Project (2002)
Based on results from the 2001 Retention Survey, a pilot project focusing on recruiting older, less educated, rural women was completed. A factorial design included revising recall cards, adding a reminder card, and adding a printed message on the outer envelope stratified by age group and rural/urban area. The successful combination was incorporated into Program activities.

Crossroads Breast Cancer Screening Project (2002-2003)
In partnership with the Crossroads Health Region (RHA09), *Screen Test* collaborated on a community development project aimed at increasing screening mammography rates among non-professional working women in RHA 9, a mainly rural area. Promotional activities and screening behaviours were evaluated, with successful endeavors incorporated into regional activities.

Other Research Projects (2001-2003)
Screen Test recruited for the Study of Tamoxifen and Raloxifene (STAR) and the Alberta Lifestyle and Physical Activity (ALPHA) trials by sending letters to eligible women. Research participants had mammograms at *Screen Test*.

Client Satisfaction

In 2002/03, *Screen Test* assessed clients' satisfaction with the Program through (1) a mailed survey, (2) focus groups, and (3) comment cards. A total of 1319 (78%) women responded to the survey, 33 women participated in focus groups held in Calgary, Edmonton, Nanton, and Vegreville, and 167 (25%) of the comment cards sent to clients were completed and returned.

***Screen Test* Booking Staff**

The survey and focus group findings highlight client satisfaction across six dimensions.[21] Satisfaction scores calculated from the survey results were very high among all dimensions, as seen in Table 10. The mean subscale score of each dimension is shown, with highest possible satisfaction being 100 and lowest possible satisfaction being 0. The confidence intervals (CIs) provide an indication of how dimensions were rated relative to others; CIs that do not overlap indicate significantly different ratings. Therefore, staff interpersonal skills were rated significantly higher than the other dimensions, except for general satisfaction. Physical surroundings were rated significantly lower than the other dimensions, except for information transfer.

The results of the survey and focus groups provided useful information for maintaining and improving the quality of services offered to *Screen Test* clients. Many of the recommendations were implemented.

Client satisfaction will be reassessed in 2004/05. Results from the upcoming survey will be compared with the 2002/03 survey to assess changes in levels of satisfaction with program services.

Table 10

Client Satisfaction Subscale Score by Dimension				
Dimension	**N**	**Mean**	**Lower 95% CL for Mean**	**Upper 95% CL for Mean**
Convenience and Accessibility	1272	80.9	80.2	81.5
Staff Interpersonal Skills	1265	83.4	82.7	84.0
Information Transfer	1257	80.0	79.3	80.7
Perceived Technical Competence	1263	81.5	80.8	82.2
Physical Surroundings	1227	78.7	78.1	79.3
General Satisfaction	1228	83.1	82.4	83.8

Summary and Future Directions

This report highlights the Alberta Cancer Board's *Screen Test* Program's activities and outcomes for the 24 month period from 2001 April to 2003 March. The Program has continued to expand services, visiting each Regional Health Authority annually, resulting in a 5% increase in screens over the previous two years. There are fewer women who have never had a mammogram and more women who are starting screening mammography in their 40s rather than their 50s, where the benefit of screening mammography has been proven. The Program outcomes of abnormal recall rates, cancer detection rates, positive predictive value, and benign to malignant biopsy ratio continue to meet Canadian and/or International targets and standards for organized breast cancer screening programs.

As the Program moves into its 14th year of operations, the focus on quality and efficiency continues to figure prominently in Program activities, together with enthusiasm to develop supporting initiatives for implementation. Plans for the future include: investigating direct referral for diagnostic work-up; centralizing mobile coordination, scheduling and booking; revising tech film audit processes and measures; centralizing data processing and correspondence generation; and reorganizing the program structure to integrate other screening programs.

With the dedication of staff and collaboration with other health organizations and partners, the *Screen Test* Program remains devoted to the goal to work as a cooperative and collaborative member of the health care system dedicated to reducing mortality from breast cancer. With this goal in mind, *Screen Test* looks forward to seeing a fully implemented provincial breast screening program.

***Screen Test* mobile mammography van out in the community**

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Appendix A: Glossary of Terms

Abnormality Rate

Proportion of screening mammogram examinations determined to require further diagnostic assessment (e.g., called "abnormal" or "needing further review").

$$\text{Abnormal Call Rate} = \frac{\text{number of exams called abnormal}}{\text{total number of exams performed}}$$

Biopsy Yield Ratio

Proportion of cases biopsied that resulted in a diagnosis of breast cancer. Excludes core biopsy.

$$\text{Biopsy Yield Ratio} = \frac{Mb}{Bb + Mb}$$

Bb – number of cases with benign diagnosis on screen-initiated biopsy

Mb – number of women found to have breast cancer on screen-initiated biopsy

Biopsy Yield Ratio, which is sometimes referred to as Positive Predictive Value of Biopsy, can also be expressed as Benign: Malignant Ratio.

$$\text{Benign: Malignant Ratio} = \frac{Bb}{Mb} :1$$

Cancer Detection Rate

Proportion of screened cases found to have breast cancer upon further investigation of an "abnormal" screening result.

Prevalent Cancer Detection Rate is the cancer detection rate on the first screening examination or self-reported last mammogram ≥ 3 years ago.

Incident Cancer Detection Rate is the cancer detection rate on the return screening examination or self-reported last mammogram < 3 years ago.

Cancers

Refers to screen-detected breast cancers.

Diagnostic Interval

Total duration from abnormal screen to resolution of abnormal screen.

Exams

Unless otherwise stated, refers to a valid mammogram appointment with *Screen Test* during the 2001/03 fiscal years.

Incident Mammogram

Refers to the last self-reported mammogram being < 3 years ago. This is not necessarily the first screening with *Screen Test*.

In Situ Cancer Detection Rate

Number of women detected with in situ cancer (non-invasive cancer) during a screening episode per 1,000 women screened.

Invasive Cancer Detection Rate

Number of women detected with invasive cancer during a screening episode per 1,000 women screened.

Invasive Cancer Tumour Size

Percentage of invasive cancers with tumour size of ≤10 mm in greatest diameter as determined by the best available evidence: 1) pathological, 2) radiological, and 3) clinical.

Participation Rate

Percentage of women who have a screening mammogram (calculated biennially) as a proportion of the age and area eligible population.

Positive Nodes in Cases of Invasive Cancer Rate

Proportion of invasive cancers in which the cancer has invaded the lymph nodes.

Positive Predictive Value (PPV)

Proportion of abnormal cases found to have a breast cancer after diagnostic work-up.

$$\text{PPV Rate} = \frac{\text{number of screen detected cancers}}{\text{number of abnormals}}$$

Post-screen Detected Invasive Cancer Rate

Number of women with a diagnosis of invasive breast cancer after a negative screening episode per 10,000 person years at risk, within 12 and 24 months of the screen date.

Prevalent Mammogram

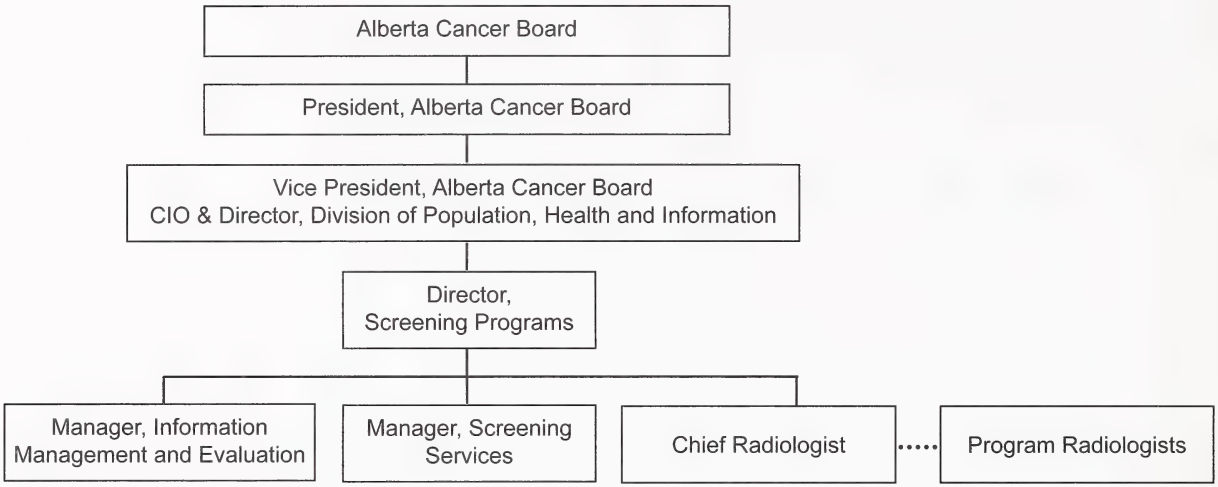
Refers to the last self-reported mammogram being ≥ 3 years ago or having never had one. This is not necessarily referring to an initial mammogram with *Screen Test*.

Retention Rate

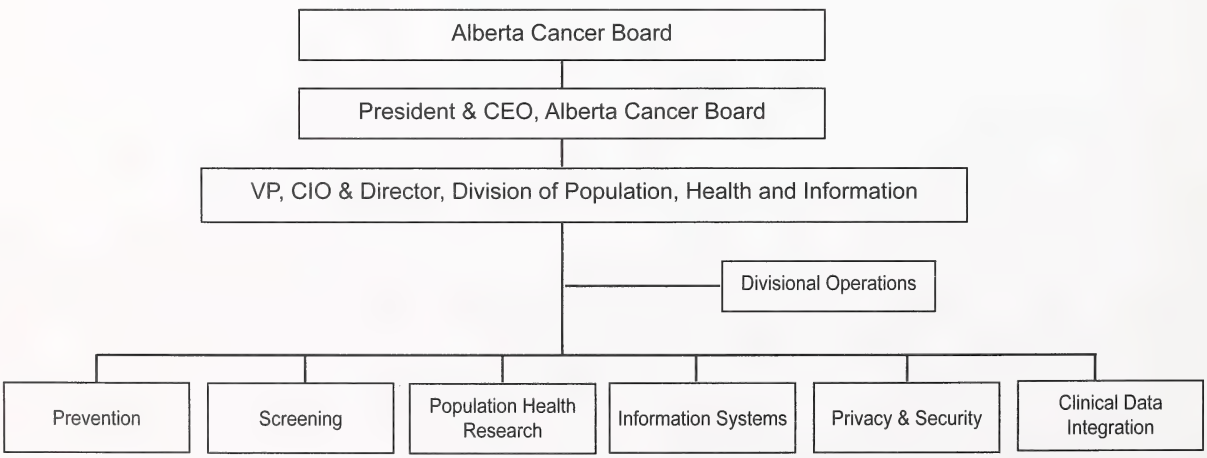
The estimated percentage of women who are re-screened within 30 months of their previous screening.

Appendix B: Organizational Charts

Screen Test: Alberta Program for the Early Detection of Breast Cancer



Division of Population Health and Information



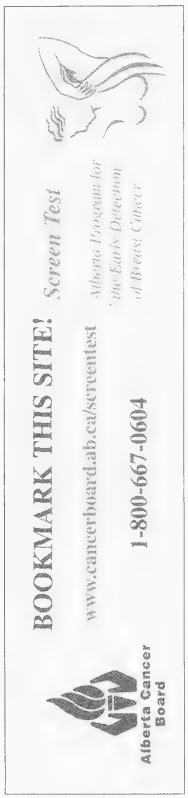
Appendix C: Relevant Legislation

The Alberta Cancer Board's *Screen Test* Program may collect, use and disclose information on clients and health service providers as authorized by legislation and ACB policies. The Program has the duty to protect this information. Program staff and volunteers are trained to adhere to all relevant legislation, which includes:

- Alberta Cancer Board Policies and Procedures
- Cancer Programs Act
- Health Information Act
- Freedom of Information and Protection of Privacy Act
- Protection of Persons in Care Act

Appendix D: *Screen Test* Resources

These resources are available free of charge from *Screen Test*:



***Screen Test* Bookmark**

Pamphlets / Booklets

Breast Cancer Screening for Alberta Women
This pamphlet is designed to inform women of the *Screen Test* Program and its eligibility requirements, and provides self-referral information. It is available in 14 different languages.

After Your Screening Mammogram
This pamphlet is available to women after they have had their mammogram at *Screen Test*. It tells women when and how they will get the results of their mammogram and what it means if the results are abnormal.

Caring for Your Breasts
This booklet, written at low literacy levels, provides women with three elements of a breast health plan: 1. Mammography, 2. Clinical Breast Exam and 3. Breast Self Examination.

Breast Cancer Screening: What You Should Know... (Health Canada)
This pamphlet, published by Health Canada, describes the benefits of breast screening programs and answers important questions about breast cancer, screening programs and mammography.

Reducing the Risk of Breast Cancer (Health Canada)
This pamphlet, published by Health Canada, describes the biological and lifestyle risk factors that are associated with breast cancer and offers advice to help women address these risks.

Fact Sheets

Breast Cancer in Alberta
A fact sheet for women summarizing breast cancer facts and statistics.

All About Screening Mammography
This fact sheet answers common questions about screening mammography and describes the process women undergo at *Screen Test*.

Breast Cancer Screening in Alberta
This fact sheet describes the results of the *Women's Knowledge, Attitudes and Behaviours Survey* with regards to mammography utilization, early detection behaviours, knowledge of risk factors, and screening guidelines.

Posters

Is it Time for Your Mammogram? 11" x 17" and 8 1/2" x 11"
These posters remind women aged 50 - 69 to have a screening mammogram every two years and include contact information for *Screen Test.*

Breast Health Posters (set of 5) 11" x 17"
These five posters describe the *Screen Test* program, steps for breast health, breast self examination, types of breast changes that should be checked by a

doctor, and average lump size found by mammograms and various examination methods. The posters may be borrowed in laminated form. They are also available condensed onto one 8 1/2" x 11" sheet, along with a summary sheet describing families and breast cancer risk.

Physician Resources

Chart Stickers

Chart stickers are available to be placed on files of age eligible women for breast cancer screening.

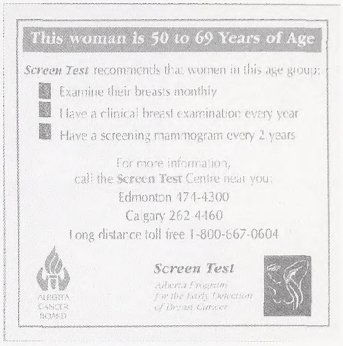

This woman is 50 to 69 Years of Age
Screen Test recommends that women in this age group:
Examine their breasts monthly
Have a clinical breast examination every year
Have a screening mammogram every 2 years
For more information,
call the Screen Test Centre near you:
Edmonton 474-4300
Calgary 262-4460
Long distance toll free 1-800-667-0604
Screen Test

Chart stickers for physicians

Breast Cancer in Alberta

This two sided fact sheet for physicians summarizes breast cancer facts and statistics.

Other Resources

Your Mammography Guide

This slide-pamphlet answers common questions about mammography and eligibility requirements for *Screen Test*.

Screen Test Information Business Cards

These business cards have *Screen Test's* logo, contact information and eligibility requirements for the program.

Screen Test Magnets

These fridge magnets have *Screen Test's* logo and contact information.

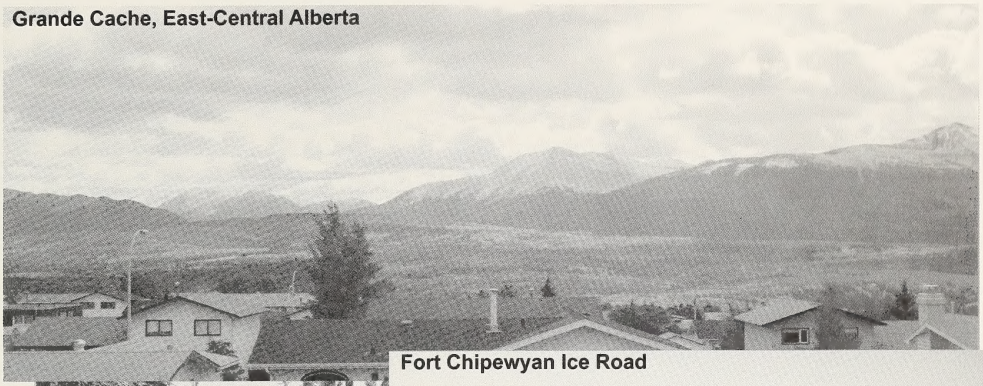
Screen Test Bookmarks

These bookmarks have *Screen Test's* logo, Web site, and phone number.

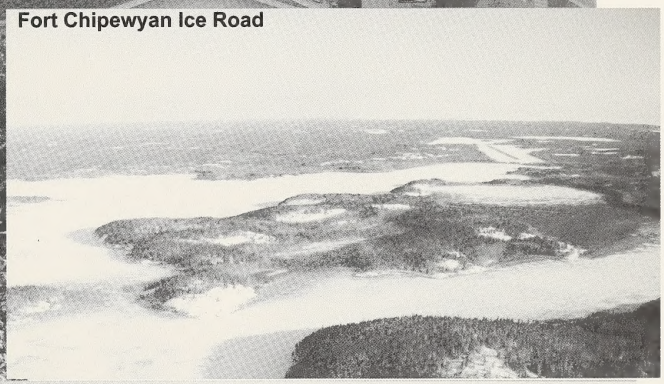
Breast Self Examination Reminder Stickers for Calendars

Sets of 12 or 15 stickers are available for women to use on their calendars as a reminder to do BSE.

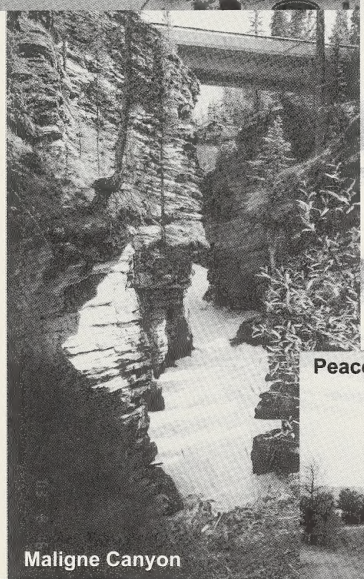
Breast Cancer Screening for Alberta Women **brochure in Chinese, Punjabi and Vietnamese**



Grande Cache, East-Central Alberta

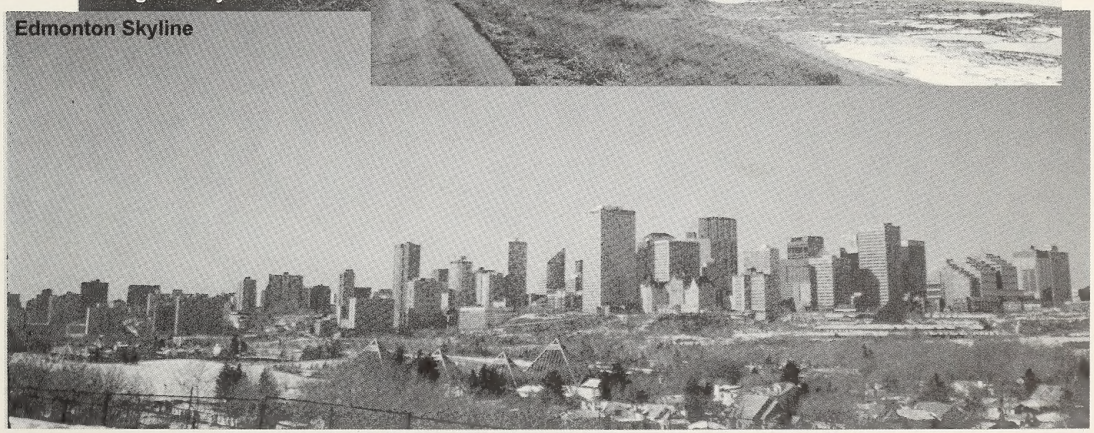


Fort Chipewyan Ice Road



Maligne Canyon

Peace River



Edmonton Skyline

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2204 - 2nd Street SW
Calgary, AB T2S 3C1

Telephone: (403) 355-3232
Fax: (403) 355-3287

Edmonton
311 Kingsway Garden Mall
109 Street and Princess Elizabeth Avenue
Edmonton, AB T5G 3A6

Telephone: (780) 474-4300
Fax: (780) 477-8418

Mobile Mammography Services / Long Distance: 1-800-667-0604